Domain: Physical Science
Matter

PS1 – All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance) **1. Students demonstrate an understanding of the characteristic properties of matter.**		
Grade Span (K-4)	Grade Span (5-8)	Grade Span (HS)
PS1.1.1 Distinguish the physical properties of matter. PS1.1.1a Indicate which object in a group has a specific physical property. (e.g. size, shape, color, texture, smell, weight) PS1.1.1b Identify common objects using one or more physical properties. PS1.1.1c Match objects using one physical property. (e.g. size, shape, color, texture, smell, weight) PS1.1.1d Compare objects using one physical property. (e.g. size, shape, color, texture, smell, weight, mass) PS1.1.1e Sort objects into two groups using one physical property. (e.g. size, shape, color, texture, smell, weight)	**PS1.1.1 Distinguish the physical properties of matter.** PS1.1.1a Identify which object in a group has a specific physical property. (e.g., size, shape, color, texture, smell, weight, etc.) PS1.1.1b Identify common objects using one or more physical properties. PS1.1.1c Match objects using one or more physical properties. (e.g. size, shape, color, texture, smell, weight, temperature) PS1.1.1d Compare objects using one or more physical properties. (e.g. size, shape, color, texture, smell, weight, mass, temperature) PS1.1.1e Sort objects into groups using one or more physical properties. (e.g. size, shape, color, texture, smell, weight, temperature)	**PS1.1.1 Distinguish the physical properties of matter.** PS1.1.1a Identify which object in a group has a specific physical property. (e.g. size, shape, color, texture, smell, weight, mass, etc.) PS1.1.1b Identify common objects using two or more physical properties. PS1.1.1c Match objects using two or more physical properties. (e.g. size, shape, color, texture, smell, weight, temperature, flexibility) PS1.1.1d Compare objects using two or more physical properties. (e.g. size, shape, color, texture, smell, weight, mass, temperature, flexibility) PS1.1.1e Sort objects into groups using two or more physical properties. (e.g. size, shape, color, texture, smell, weight, temperature, flexibility) PS1.1.1f Indicate which object from a group of two or three objects has the greater density. (As determined from 1.1.1g, density is mass/volume) PS1.1.1g Compare the characteristic

	PS1.1.2 Identify changes in the physical properties of matter. PS1.1.2a Identify physical changes. (e.g. freezing, melting, boiling, tearing paper)	properties of two substances (e.g. density, freezing/melting point, boiling point) PS1.1.1h Describe why objects are grouped together. **PS1.1.2 Identify changes in the physical properties of matter.** PS1.1.2a Identify physical changes. (e.g. freezing, melting, boiling, tearing paper) PS1.1.2b Describe physical changes.

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PS1 – All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance) **2. Students demonstrate an understanding of states of matter.**		
Grade Span (K-4)	Grade Span (5-8)	Grade Span (HS)
PS1.2.1 Recognize states of matter. PS1.2.1a Recognize a solid. PS1.2.1b Recognize a liquid.	**PS1.2.1 Compare states of matter.** PS1.2.1a Recognize a solid. PS1.2.1b Recognize a liquid. PS1.2.1c Recognize a gas. PS1.1d Compare the states of matter. (e.g. solids have a definite shape and definite volume, liquids have a definite volume but take the shape of their container, gases have no definite volume or shape)	**PS1.2.1 Classify states of matter.** PS1.2.1a Recognize a solid. PS1.2.1b Recognize a liquid. PS1.2.1c Recognize a gas. PS1.2.1d Compare the states of matter. (e.g. solids have a definite shape and definite volume, liquids have a definite volume but take the shape of their container, gases have no definite volume or shape)

	PS1.2.2Recognize that states of matter can change PS1.2.2a Recognize that states of matter can change. (e.g. solid to liquid - melting, liquid to gas - vaporization, gas to liquid - condensation, liquid to solid - freezing etc.)	PS1.2.1e Identify a solid. PS1.2.1f Identify a liquid. PS1.2.1g Identify a gas. PS1.2.1h Classify solids, liquids, and gases. **PS1.2.2 Identify that states of matter can change** PS1.2.2a Identify that states of matter can change (e.g. solid to liquid - melting, liquid to gas - vaporization, gas to liquid - condensation, liquid to solid - freezing etc.) PS1.2.2b Identify that states of matter can change by adding or subtracting energy (e.g. heating and cooling).

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PS1 – All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance) **3. Students demonstrate an understanding of conservation of matter.**		
Grade Span (K-4)	Grade Span (5-8)	Grade Span (HS)
PS1.3.1 Demonstrate an understanding of mass. PS1.3.1a Measure the masses of objects using balances or see-saws. PS1.3.1b Recognize that some objects are more massive than others. PS1.3.1c Measure the masses of a whole object and parts of that whole object. PS1.3.1d Recognize that the mass of a whole object is greater than the mass of each part of	**PS1.3.1 Demonstrate an understanding of mass.** PS1.3.1a Measure the masses of objects using balances or see-saws. PS1.3.1b Identify that some objects are more massive than others. PS1.3.1c Measure the masses of a whole object and parts of that whole object. PS1.3.1d Identify that the mass of a whole object is greater than the mass of each part	**PS1.3.1 Demonstrate an understanding of mass.** PS1.3.1a Measure the masses of objects using balances or see-saws. PS1.3.1b Describe that some objects are more massive than others. PS1.3.1c Measure the masses of a whole object and parts of that whole object. PS1.3.1d Describe that the mass of a whole object is greater than the mass of each part

that whole object. PS1.3.1e Compare the masses of objects measured.	of that whole object. PS1.3.1e Compare the masses of objects measured.	of that whole object. PS1.3.1e Compare the masses of objects measured. PS1.3.1f Compare the masses of objects of equal volume made of different substances. **PS1.3.2 Identify conservation of matter.** PS1.3.2a Recognize that the mass of a whole object is always the same as the sum of the masses of its parts. PS1.3.2b Identify that the mass of a whole object is always the same as the sum of the masses of its parts. PS1.3.2c Show that the mass of an object is the same before and after a physical change.

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PS1 – All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance) **4. Students demonstrate an understanding of the structure of matter.**		
Grade Span (K-4)	Grade Span (5-8)	Grade Span (HS)
	PS1.4.1 Recognize categories of matter. PS1.4.1a Recognize pure substances. (e.g. sugar, salt, water) PS1.4.1b Recognize a mixture. (e.g. peas and carrots, rocks and leaves, trail mix) PS1.4.1c Recognize solutions. (e.g. koolade, lemonade, hot chocolate) PS1.4.1d Recognize one or more physical changes. (e.g. tearing paper, breaking a pencil, food color in water, evaporation,	**PS1.4.1 Identify categories of matter.** PS1.4.1a Identify pure substances. (e.g. sugar, salt, water) PS1.4.1b Identify a mixture. (e.g. peas and carrots, rocks and leaves, trail mix) PS .4.1c Identify solutions. (e.g. koolade, lemonade, hot chocolate) PS1.4.1d Recognize two or more physical changes. (e.g. tearing paper, breaking a pencil, food color in water, evaporation,

	condensation, freezing or melting)	condensation, freezing or melting) PS1.4.1e Sort substances into mixtures, solutions, and pure substances. PS1.4.1f Recognize that when physical changes occur, the substance stays the same although the appearance might change. PS1.4.1g Recognize compounds. (e.g. baking a cake is a compound because it changes form and the parts can't be separated) **PS1.4.2 Distinguish between metals and nonmetals.** PS1.4.2a Recognize a metal PS1.4.2b Recognize a nonmetal PS1.4.2c Select a metal from a group of one metal and several nonmetals. PS1.4.2d Select a nonmetal from a group of one nonmetal and several metals.

Energy

PS2 – Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed. **1. Students demonstrate an understanding of energy.**		
Grade Span (K-4)	Grade Span (5-8)	Grade Span (HS)
PS2.1.1 Recognize forms of energy. PS2.1.1a Recognize light energy. (e.g. Recognize shadows as places where light energy is blocked, make shadows with flashlights.) PS2.1.1b Recognize sound energy. (e.g. Recognize sound vibrations as sound energy by plucking guitar strings, feeling drums vibrate, feeling cell phones vibrate, seeing salt vibrate on a drum.) PS2.1.1c Recognize heat energy. (e.g., Recognize the sun's feeling of warmth as heat energy. Take the students outside on a sunny day and use a solar cooker to cook hot dogs.) PS2.1.1d Recognize electrical energy. (e.g., Recognize that hair stands on end when rubbed with a balloon because of electrical energy - static electricity. Recognize a static electricity shock from a carpet as electrical energy.) PS2.1.1e Recognize mechanical energy. (Recognize mechanical energy in the movements of a wheel chair or hand mixer.)	**PS2.1.1 Identify forms of energy.** PS2.1.1a Identify light energy. (e.g. Recognize shadows as places where light energy is blocked, make shadows with flashlights.) PS2.1.1b Identify sound energy. (e.g. Recognize sound vibrations as sound energy by plucking guitar strings, feeling drums vibrate, feeling cell phones vibrate, seeing salt vibrate on a drum.) PS2.1.1c Identify heat energy. (e.g., Recognize the sun's feeling of warmth as heat energy. Take the students outside on a sunny day and use a solar cooker to cook hot dogs.) PS2.1.1d Identify electrical energy. (e.g., Recognize that hair stands on end when rubbed with a balloon because of electrical energy - static electricity. Recognize a static electricity shock from a carpet as electrical energy.) PS2.1.1e Identify mechanical energy. (Recognize mechanical energy in the movements of a wheel chair or hand mixer.)	**PS2.1.1 Describe forms of energy.** PS2.1.1a Describe light energy. (e.g. Recognize shadows as places where light energy is blocked, make shadows with flashlights.) PS2.1.1b Describe sound energy. (e.g. Recognize sound vibrations as sound energy by plucking guitar strings, feeling drums vibrate, feeling cell phones vibrate, seeing salt vibrate on a drum.) PS2.1.1c Describe heat energy. (e.g. Recognize the sun's feeling of warmth as heat energy. Take the students outside on a sunny day and use a solar cooker to cook hot dogs.) PS2.1.1d Describe electrical energy. (e.g. Recognize that hair stands on end when rubbed with a balloon because of electrical energy - static electricity. Recognize a static electricity shock from a carpet as electrical energy.) PS2.1.1e Describe mechanical energy. (Recognize mechanical energy in the movements of a wheel chair or hand mixer.)

	PS2.1.2 Recognize different magnitudes of energy. PS2.1.2a Recognize differences in heat absorption. (Suggestion: Feel how a dark material becomes hotter than a light material when they are left in the sunlight for the same amount of time.) PS2.1.2b Recognize differences in sound energy. (e.g. Hitting a drum softly produces small vibrations, hitting a drum hard produces larger vibrations.) PS2.1.2c Recognize differences in mechanical energy. (e.g. toy car moving slowly versus a toy car moving quickly)	**PS2.1.2 Identify different magnitudes of energy.** PS2.1.2a Identify differences in heat absorption. (Suggestion: Feel how a dark material becomes hotter than a light material when they are left in the sunlight for the same amount of time.) PS2.1.2b Identify differences in sound energy. (e.g. Hitting a drum softly produces small vibrations, hitting a drum hard produces larger vibrations.) PS2.1.2c Identify differences in mechanical energy. (e.g. toy car moving slowly versus a toy car moving quickly) **PS2.1.3 Recognize that energy can be transformed from one form to another.** PS2.1.3a Recognize one or more energy transformations that occur in daily life. (e.g. Electrical energy is changed to light and heat energy in a lamp; energy in gasoline is changed to mechanical energy when a car moves.)

Energy

PS2 – Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed. **2. Students demonstrate an understanding of physical and chemical changes.**		
Grade Span (K-4)	Grade Span (5-8)	Grade Span (HS)
	PS2.2.1 Recognize physical and chemical changes. PS2.2.1a Recognize physical changes. PS2.2.1b Recognize chemical changes.	**PS2.2.1 Recognize physical and chemical changes.** PS2.2.1a Identify physical changes. PS2.2.1b Identify chemical changes. PS2.2.1c Recognize that in a physical change the substance stays the same although the appearance might change. PS2.2.1d Recognize that when chemical changes occur the substance changes into something different.

Forces and Motion

PS3 – The motion of an object is affected by forces. **1. Students demonstrate an understanding of motion.**		
(K-4)	(5-8)	(HS)
PS3.1.1 Recognize the relationship between force and motion. PS3.1.1a Recognize something as moving or not moving. PS3.1.1b Identify something as moving or not moving. PS3.1.1c Make something move pushing or pulling (applying force).	**PS3.1.1 Recognize the relationship between force and motion.** PS3.1.1a Recognize something as moving or not moving PS3.1.1b Identify something as moving or not moving. PS3.1.1c Make something move by pushing or pulling (applying force).	**PS3.1.1 Identify the relationship between force and motion.** PS3.1.1a Recognize something as moving or not moving PS3.1.1b Identify something as moving or not moving. PS3.1.1c Make something move by pushing or pulling (applying force).

	PS3.1.1d Identify the initial and final positions of an object that moves. PS3.1.1e Recognize that objects can move in different directions (e.g. horizontally, vertically, forward, backward) PS3.1.1f Recognize an object changing direction. PS3.1.1g Recognize one object moving faster/slower (speed) than another object. PS3.1.1h Recognize that a different amount of force on the same object causes different amounts or speeds of movement. (e.g. a harder push or pull)	PS3.1.1d Identify the initial and final positions of an object that moves. PS3.1.1e Identify that objects can move in different directions (e.g. horizontally, vertically, forward, backward) PS3.1.1f Identify an object changing direction. PS3.1.1g Identify one object moving faster/slower (speed) than other objects. PS3.1.1h Recognize that a different amount of force on the same object causes different amounts or speeds of movement. (e.g. a harder push or pull) PS3.1.1i Predict the direction that an object will or will not move when a force (push or pull) is applied to it.

Forces and Motion

PS3 – Motion of an object is affected by forces. **2. Students demonstrate an understanding of magnetic force.**		
Grade Span (K-4)	Grade Span (5-8)	Grade Span (HS)
PS3.2.1 Recognize magnetic forces. PS3.2.1a Recognize that some objects may or may not be attracted to magnets.	**PS3.2.1 Identify characteristics of magnetic forces.** PS3.2.1a Identify that objects may or may not be attracted to magnets PS3.2.1b Identify objects that are and are not attracted to magnets. PS3.2.1c Sort objects into those that are attracted to magnets and those that are not attracted to magnets. PS3.2.1d Predict whether an object will be attracted to a magnet. PS3.2.1e Recognize that magnets have poles that repel and attract each other.	**PS3.2.1 Identify characteristics of magnetic forces.** PS3.2.1a Describe that objects may or may not be attracted to magnets PS3.2.1b Identify objects that are and are not attracted to magnets. PS3.2.1c Sort objects into those that are attracted to magnets and those that are not attracted to magnets. PS3.2.1d Predict whether an object will be attracted to a magnet. PS3.2.1e Recognize that magnets have poles that repel and attract each other. PS3.2.1f Recognize that magnets have different strengths. (Suggestion: Work with two magnets of different strengths and compare what they can pick up.)

Forces and Motion

PS3 – The motion of an object is affected by forces. **3. Students demonstrate an understanding of gravitational force.**		
(K-4)	(5-8)	(HS)
PS3.3.1 Recognize the effect of gravity on objects. PS3.3.1a Recognize that objects fall unless something is holding them up.	**PS3.3.1 Recognize the effect of gravity on objects.** PS3.3.1a Recognize that objects fall to the earth unless something is holding them up.	**PS3.3.1 Identify the effect of gravity on objects.** PS3.3.1a Recognize that objects fall to the earth unless something is holding them up.

		PS3.3.1b Identify that objects fall because of the pull of the Earth's gravity.

PHYSICAL SCIENCE GLOSSARY

- **Balance** – an instrument used to measure the mass of an object.
- **Characteristic property** – quality of matter that helps identify or classify matter. Characteristic properties can be physical or chemical in nature. (density, melting point, reactivity)
- **Chemical change** – when one or more substances are changed into new substance(s) with new and different properties.
- **Chemical property** – a characteristic of matter that describes a substance's ability to be involved in chemical reactions
- **Compound** – matter that is made of two or more elements that are chemically combined. Cannot be separated by physical means.
- **Condensation** – the physical change of matter going from a gaseous state to a liquid state.
- **Evaporation** – vaporization that occurs only at the surface of a liquid.
- **Gas** – matter that has no definite shape or volume.
- **Liquid** – matter that has a definite volume but takes the shape of the container holding it.
- **Mass** – amount of matter in something.
- **Matter** – anything that has mass and takes up space.
- **Mixture** – a combination of two or more substances that are not combined chemically but can be separated by physical means (beach sand, peas and carrots)
- **Physical change** – a change of matter from one form to another without a change in chemical properties
- **Physical property** – a characteristic of matter that does not involve a chemical change, such as density, color or hardness
- **Pure substance** – substance whose parts are identical throughout.
- **Scale** – an instrument used to measure the weight of an object.
- **Solid** – matter that has a definite shape and volume.
- **Solution** – homogenous mixture in which one substance dissolves into another.
- **Vaporization** – the physical change of a liquid to a gas.
- **Weight** – measure of the force of gravity on an object.